WINCHESTER WATER DEPARTMENT (PWS 2310007)
SOURCE WATER ASSESSMENT FINAL REPORT

February 6, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for Winchester Water Department, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Winchester Water Department drinking water system consists of three wells: Well #4 NW, Well #7 SW, and Well #10 NE. All three wells rated moderate susceptibility to inorganic, volatile organic, synthetic organic, and microbial contaminants, except for two cases. Well #7 SW rated high for inorganic contaminants and Well #10 NE rated high for volatile organic contaminants. The main difference between the ratings was that the Well #4 NW log indicated the presence of low permeability clay layers that reduced the hydrologic sensitivity score to the moderate category.

There are no current significant water quality issues with the system. Total coliform bacteria have been detected in September 1997 and October 1995 at various locations throughout the Winchester Water Department. These numerous detections could signal a possible contamination problem. No volatile organic contaminants or synthetic organic contaminants have ever been detected. The inorganic contaminants manganese and nitrate have been detected, but at levels below the current maximum contaminant levels as set by the EPA. Though there have not been chemical problems with the system water, the Winchester Water Department should be aware that the potential for contamination from the aquifer still exists.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Winchester Water Department system drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system’s components and its capacity). Also, a disinfection system should be investigated as a way to deal with the total coliform bacteria detections. No chemicals should be stored or applied within the 50-foot radius of the wellheads. A contingency plan should be established to deal with any contamination and possible spills from Lapwai Creek, Lapwai Lake, and Highway 95. As much of the designated protection areas are outside the direct jurisdiction of the Winchester Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations encompass much urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there is a major transportation corridor through the delineation (Highway 95), the Idaho Department of Transportation should be involved in protection activities. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR WINCHESTER WATER DEPARTMENT, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the Winchester Water Department is comprised of three ground water wells that serve approximately 350 people through approximately 212 connections. The wells are located in Lewis County, in various locations to the north and west of the City of Winchester (Figure 1).

There are no significant water problems currently affecting the Winchester Water Department source water. The inorganic contaminants (IOCs) manganese and nitrate have been detected, but at levels below the maximum contaminant levels (MCLs) as set by the EPA. No volatile organic contaminants (VOCs) or synthetic organic contaminants (SOCs) have been detected in the well water. In October 1995 and September 1997, total coliform bacteria were detected in the distribution system.

Defining the Zones of Contribution – Delineation

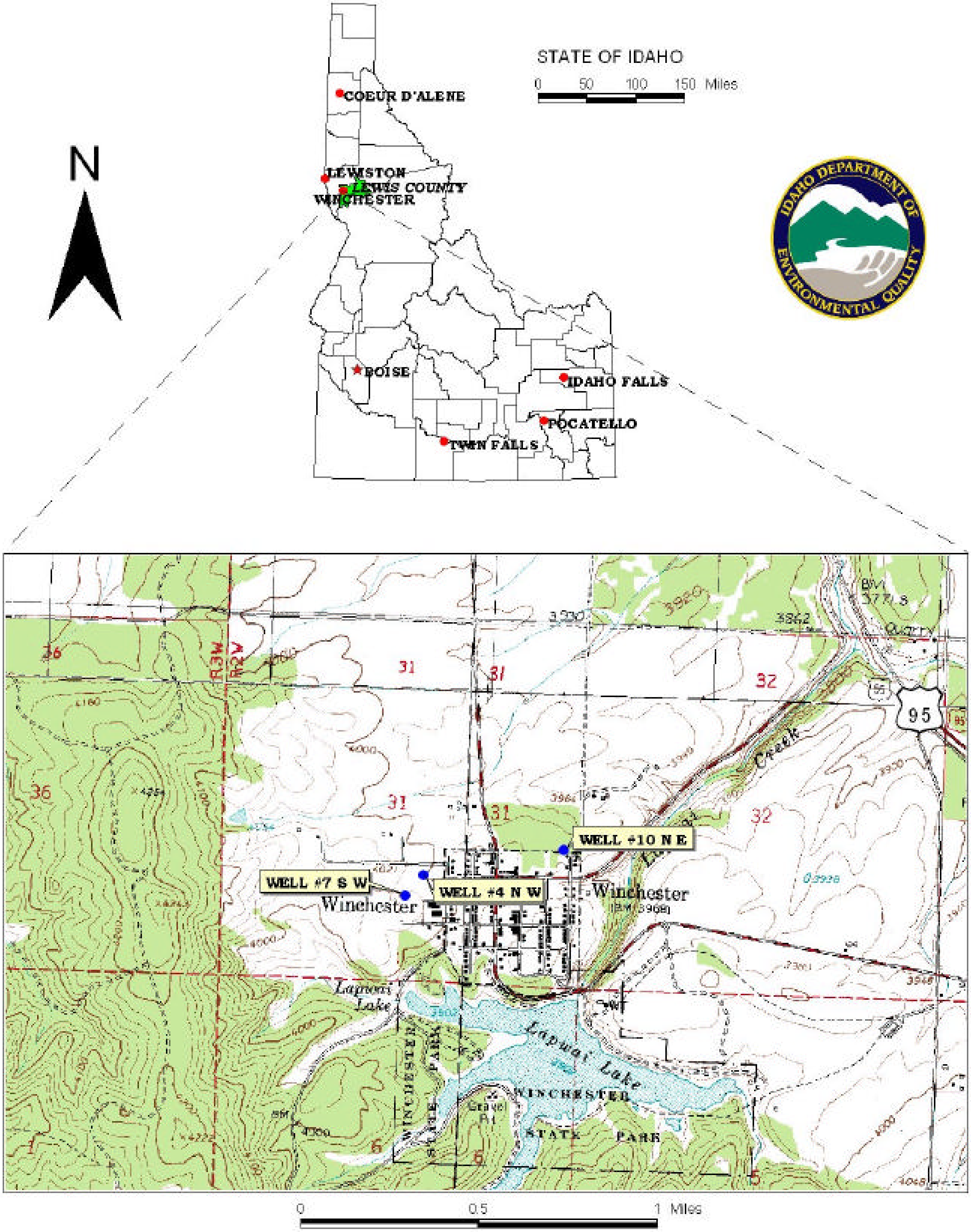
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Grande Ronde aquifer of the Clearwater Plateau in the vicinity of the Winchester Water Department wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including the Winchester Water Department well logs and operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model of the Winchester area is based on the report by Ralston and Bond (1977). Winchester is located on mostly flay-lying basalt flows, which create a plateau margin nearby. Granite bounds the town to the south and west. Basalt flows (1 to 6 flows) cover portions of an ancestral granite mountain range with gentle slopes to the north and northeast. The depth to granite increases to the north.

Wells located in solid granite rock units typically produce less than 10 to 15 (gpm), compared to the 2,500 gpm pumped from basalt aquifers in northern Idaho. Most of the ground water found in basalts lies in the vesicular contact, fracture zones or in the sediments between basalt flows. Ground water occurrence in the crystalline rock is influenced by weathering at shallow depths and fracturing at deeper depths (Kaal, 1978). Granites do not have large, extensive fractures. Typically, ground water occurs under perched and water table conditions in surficial sediments and weathered bedrock, whereas weathered and fractured granite at deeper depths may contain ground water under confined conditions (Kaal, 1978). The contouring of static water levels indicates steep and highly irregular gradients (Kaal, 1978).

The City of Winchester wells produce an average of 30 to 150 gallons per minute (gpm). From west to east the static water level (based on well logs) increases from Well #7 SW to Well #4 NW but then

FIGURE 1. Geographic Location of the Winchester Water Dept.



decreases from well #4 to well #10. A possible explanation for this is a declining water table after well #4 was drilled.

The contact between the basalt and granite lies to the south and west of Winchester. However, this is not necessarily a barrier to flow because the well logs show the top of the granite is highly weathered. In this area the top of the granite and the basalt act as one hydrologic unit. Source wells are located in the fractured basalt and decomposed granite.

Upper Lapwai Creek flows into Lapwai Lake (otherwise known as Winchester Lake) and Lower Lapwai Creek then continues north. It is located in a 600 foot-deep canyon and is a local topographic low. It is thought to be a gaining stream because it is a perennial stream. This inference is also based on the direction of flow from static water levels in the source wells and from the generalized cross-section from Lapwai Lake to Lapwai Creek presented in Ralston and Bond (1977).

No aquifer recharge data are available for the Winchester area. In a study by Wyatt-Jaykim (1994), recharge to the central basin (Lewiston basin) was modeled as 1 inch/year; 2 inches/year was selected in the higher areas. Because Winchester lies at a much higher elevation than much of the basin, precipitation rates are much higher, 13 inches/year in Lewiston-Clarkston (Cohen and Ralston, 1980) versus 25 inches/year at Winchester State Park (Dorgan, 2001). Recharge is therefore expected to be greater.

Ground water is thought to be recharged by Lapwai Lake. Head values in the test points are very similar to the elevation of the Lake. In addition, pumping of the source wells creates a cone of depression causing a gradient or enhancing the gradient from the lake to the wells. The existence of a large body of water should induce recharge to that region; although, no data are available.

The capture zones delineated herein are based upon limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data.

The delineated source water assessment areas for the Winchester Water Department can best be described as interfering circles that incorporate the boundaries of Lapwai Lake. The 3-year TOTs are isolated for Well #10 NE and for the other two wells, but the 6-year TOT and 10-year TOT are shared for all three wells (Figures 2 & 3). The actual data used by the University of Idaho in determining the source water assessment delineation areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the Winchester Water Department wells consists of urban, residential, and a major transportation corridor, while the surrounding area is predominantly undetermined agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in October and November 2001. The first phase involved identifying and documenting potential contaminant sources within the Winchester Water Department source water assessment areas (Figures 2 & 3) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

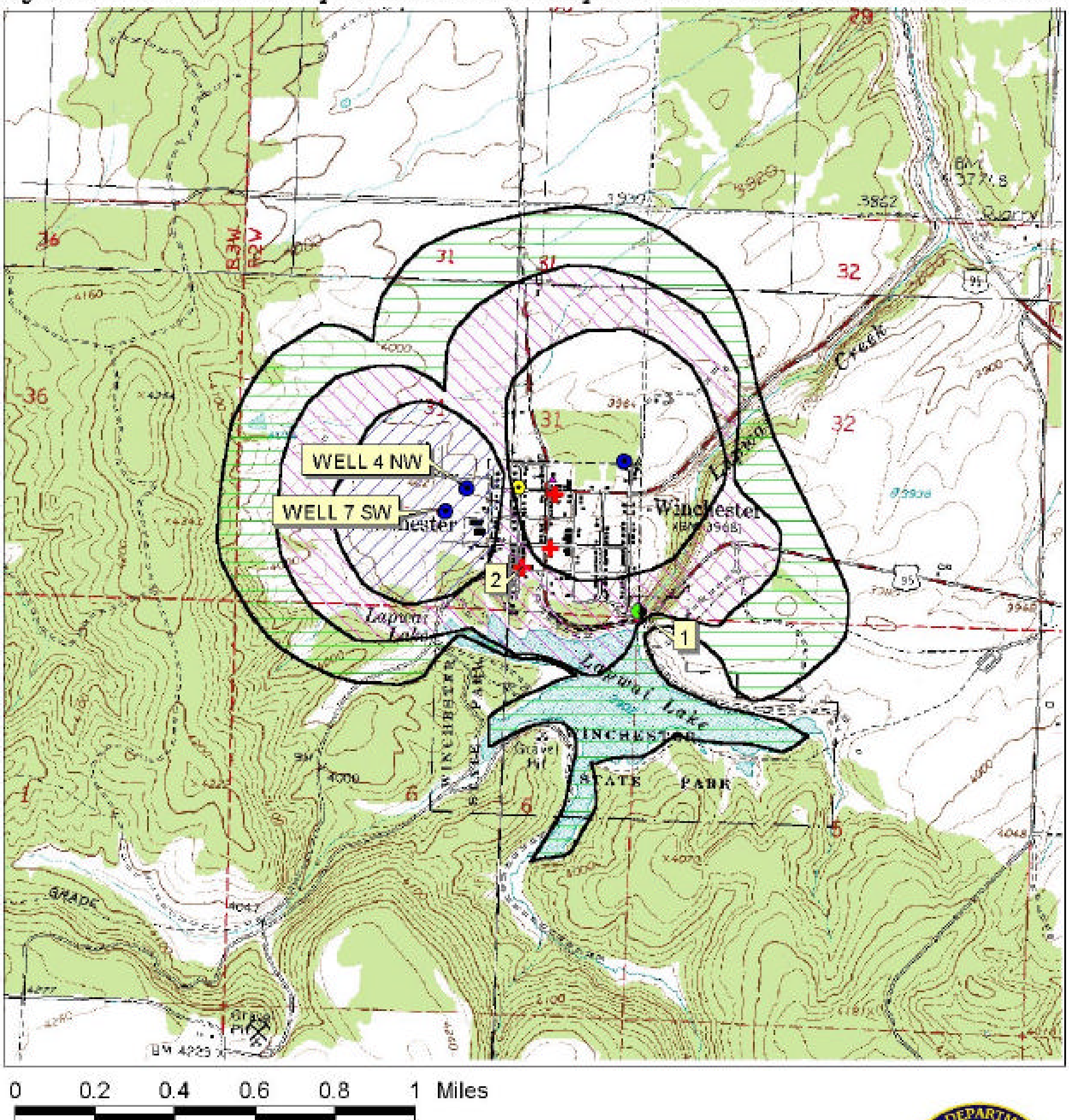
Since Well #4 NW and Well #7 SW share the same delineation, both wells have the same potential contaminant sources (Table 1). The Well #10 NE delineation (Figure 3) encompasses downtown Winchester and, therefore, has more potential contaminant sources (Table 2). These sources include an underground storage tank (UST), two old gas stations, an open gas station, a roofing contractor, and the City of Winchester municipal discharge site regulated by the National Pollutant Discharge Elimination System (NPDES) permit system. In addition, both delineations contain Lapwai Creek, Lapwai Lake, and Highway 95 as potential contaminant sources. The system should be aware that a spill on the section of Highway 95 contained within the delineations has a chance to contribute all classes of contamination to the aquifer.

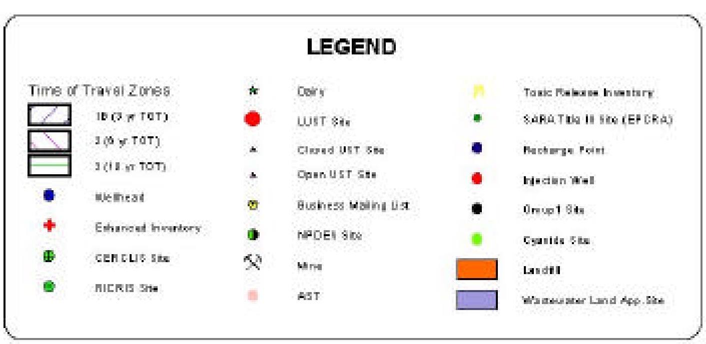
Table 1. Winchester Water Department Well #4 NW and Well #7 SW, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE[2]	Source of Information	Potential Contaminants[3]
	Highway 95	3-10	GIS Map	IOC, VOC, SOC
	Lapwai Creek	3-10	GIS Map	IOC, VOC, SOC
	Lapwai Lake	3-10	GIS Map	IOC, VOC, SOC
1	NPDES – Municipal discharge	3-6	Database Search	IOC
2	Gas Station – Open	3-6	Enhanced Inventory	VOC, SOC

[1] NPDES = National Pollutant Discharge Elimination System
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 2. Winchester Water Department Delineation Map and Potential Contaminant Source Locations





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PWS# 2310007
WELL #4 NW
WELL #7 SW

Figure 3. Winchester Water Department Delineation Map and Potential Contaminant Source Locations

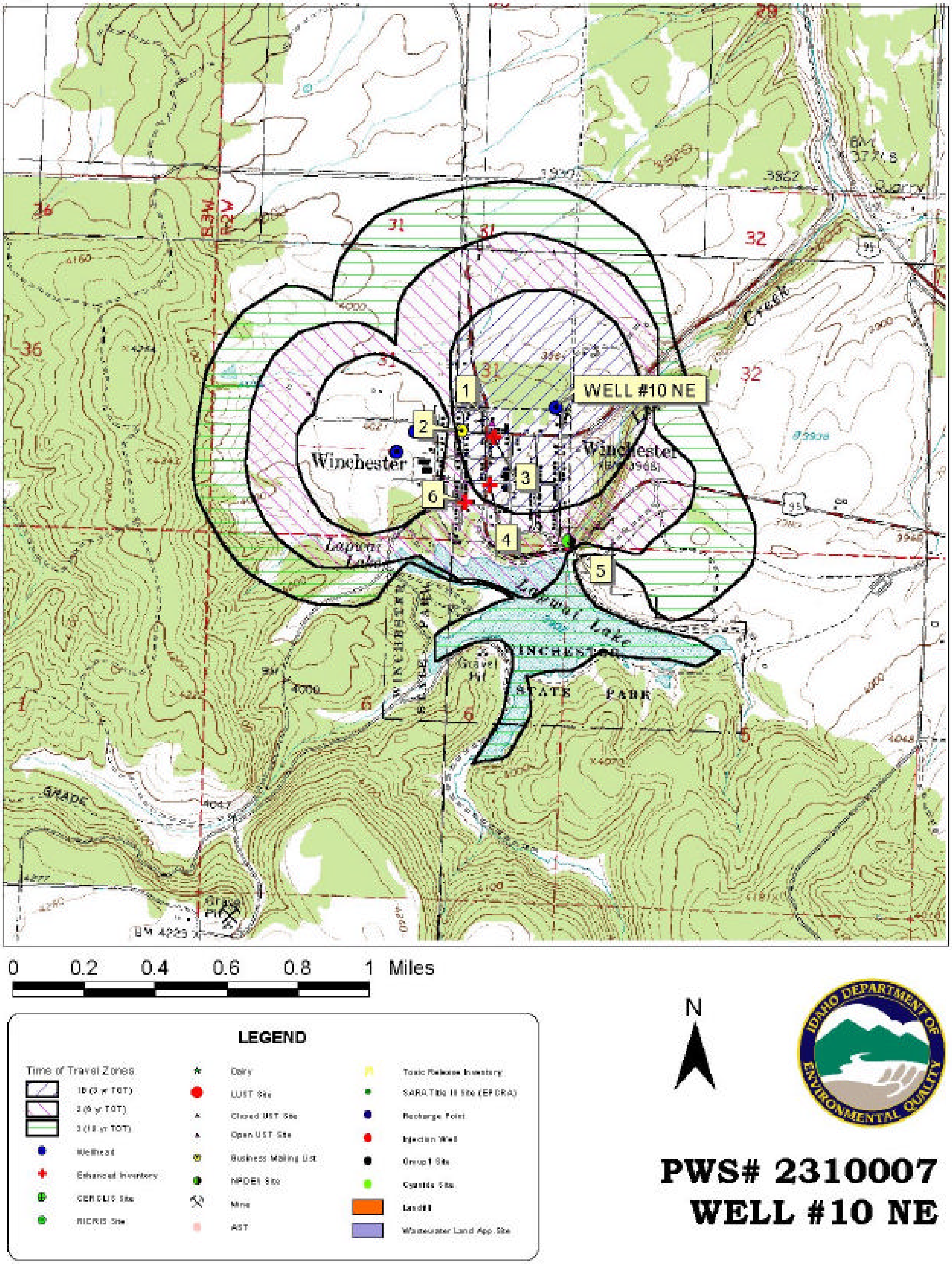

Table 2. Winchester Water Department Well #10 NE, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE[2]	Source of Information	Potential Contaminants[3]
	Highway 95	0-10	GIS Map	IOC, VOC, SOC, Microbials
	Lapwai Creek	0-10	GIS Map	IOC, VOC, SOC, Microbials
	Lapwai Lake	3-10	GIS Map	IOC, VOC, SOC
1	UST – Open	0-3	Database Search	VOC, SOC
2	Roofing Contractor	0-3	Database Search	IOC, VOC, SOC
3	Gas Station - historical	0-3	Enhanced Inventory	VOC, SOC
4	Gas Station - historical	0-3	Enhanced Inventory	VOC, SOC
5	NPDES – Municipal discharge	3-6	Database Search	IOC
6	Gas Station - Open	3-6	Enhanced Inventory	VOC, SOC

[1] UST = underground storage tank, NPDES = National Pollutant Discharge Elimination System
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is high for Well #7 SW and Well #10 NE and is moderate for Well #4 NW (Table 3). Regional soil data places the delineations within moderate to well drained soils. The vadose zone is clay and basalt and the water table is located from about 50 to 150 feet below ground surface (bgs). Hydrologic sensitivity for Well #4 NW is moderate because the well log shows that there is a 45-foot sedimentary interbed within the basalt layer and some clay layers near the surface.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 2001. All three wells have moderate system construction scores.

Well #4 NW, drilled in 1971 to a depth of 473 feet, has 8-inch casing installed to 331 feet bgs into "slightly decomposed granite" and open hole from 331 to 473 feet bgs. The annular seal is set to 63 feet bgs into "medium hard basalt." These geologic units are considered to be low permeability. The static water table is approximately 64 feet bgs and the well produces from two zones: 282 to 303 feet bgs from basalt and 303 to 380 feet bgs from decomposed granite. Current use is at a level of 30 gallons per minute (gpm). The sanitary survey (DEQ, 2001) states that Well #4 NW has a high perched water table causing standing water in an adjacent pit. Local standing water indicates that the system may not be protected from surface flooding.

Well #7 SW, drilled in 1990 to a depth of 460 feet, has 0.250-inch thick, 6-inch casing installed to 323 feet bgs and open hole from 323 to 460 feet bgs. The annular seal was installed to 30 feet bgs into "broken basalt." The static water table is approximately 150 feet bgs and the well produces from three zones: 120 to 180 feet bgs from basalt, 321 to 325 feet bgs from decomposed granite, and 325 to 460 feet bgs from hard granite. The well is screened from 170 to 180 feet bgs. Current use is at a level of 35 gpm. With the information available, Well #7 SW was assessed to be protected from surface flooding. No information was given concerning the well seal.

Well #10 NE, drilled in 1992 to a depth of 600 feet, has telescoping casing of 15-, 12-, 8-, and 6-inch diameter installed to 340 feet bgs into "basalt with clay" and open hole from 340 to 600 feet bgs. The well was plugged below about 450 feet with bentonite. An annular seal was installed to 200 feet bgs into dense basalt. The static water table is approximately 180 feet bgs and the well produces from one main zone: 163 to 340 feet bgs from basalt. Current use is at a level of 150 gpm. Well #10 NE has a carefully constructed well house that provides an adequate well seal and protection from flooding.

A determination was made as to whether current public water system (PWS) construction standards are being met. Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter wells require a casing thickness of at least 0.280-inches and 8-inch diameter casing requires 0.322-inch thick casing. The wells were assessed an additional point in the system construction rating.

Potential Contaminant Source and Land Use

As the delineations are nearly the same, except for the 3-year TOT, the land use scores are similar as well. All three wells rated moderate land use for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products, chlorinated solvents), and SOCs (i.e. pesticides), and rated low land use for microbial contaminants (i.e. bacteria). The presence of Highway 95, Lapwai Lake, and Lapwai Creek influenced the scores the most as these sources could contribute all classes of contamination in the unlikely event of a spill.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, all the wells rate moderate for all classes of contaminants, except for Well #7 SW rating high for IOCs and Well #10 NE rating high for VOCs.

Table 3. Summary of Winchester Water Department Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
Well		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
#4 NW	M	M	M	M	L	M	M	M	M	M
#7 SW	H	M	M	M	L	M	H	M	M	M
#10 NE	H	M	M	M	L	M	M	H	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Overall, all the wells rate moderate for all classes of contaminants, except for Well #7 SW rating high for IOCs and Well #10 NE rating high for VOCs. One main difference between the wells is that the Well #4 NW log showed the presence of 50-foot cumulative thickness of low permeability clay layers that lowered the hydrologic sensitivity score from high to moderate. In addition, Well #10 NE has more potential contaminant sites within the 3-year TOT, leading to the high VOC score.

There are no significant water problems currently affecting the Winchester Water Department source water. The IOCs fluoride, barium, and nitrate have been detected, but at levels below the MCLs as set by the EPA. No VOCs or SOCs have been detected in the well water. In November 1992, March 1993, July 1994, March 1995, December 1995, January 1996, and July 1997, total coliform bacteria were detected in the distribution system.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Winchester Water Department system drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Also, a disinfection system should be investigated as a way to deal with the total coliform bacteria detections. No chemicals should be stored or applied within the 50-foot radius of the wellheads. A contingency plan should be established to deal with any contamination and possible spills from Lapwai Creek, Lapwai Lake, and Highway 95. As much of the designated protection areas are outside the direct jurisdiction of the Winchester Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations encompass much urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there is a major transportation corridor through the delineation (Highway 95), the Idaho Department of Transportation should be involved in protection activities. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office	(208) 799-4370
State DEQ Office	(208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

Winchester Water Department Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report   Public Water System Name : WINCHESTER WATER DEPT   Well# : WELL #4 N W

Public Water System Number 2310007   01/11/2002 10:01:00 AM

1. System Construction		SCORE			
Drill Date	04/21/1971				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	NO	1			
Total System Construction Score		3			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		3			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	1	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or	YES	4	0	0	
4 Points Maximum		4	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	4	4	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		15	11	11	5
4. Final Susceptibility Source Score		9	8	8	8
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report   Public Water System Name : WINCHESTER WATER DEPT   Well# : WELL #7 S W

Public Water System Number 2310007   01/11/2002 10:01:16 AM

1. System Construction		SCORE			
Drill Date	01/01/1991				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	1	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or	YES	4	0	0	
4 Points Maximum		4	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	4	4	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		15	11	11	5
4. Final Susceptibility Source Score		13	12	12	12
5. Final Well Ranking		High	Moderate	Moderate	Moderate

Ground Water Susceptibility Report   Public Water System Name : WINCHESTER WATER DEPT   Well# : WELL #10 N E

Public Water System Number 2310007   01/11/2002 10:01:32 AM

1. System Construction		SCORE			
Drill Date	09/01/1992				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
	Total System Construction Score	3			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
	Total Hydrologic Score	6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	1	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	5	5	2
(Score = # Sources X 2) 8 Points Maximum		6	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	4	2	
4 Points Maximum		2	4	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	12	10	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		15	19	17	5
4. Final Susceptibility Source Score		12	13	12	11
5. Final Well Ranking		Moderate	High	Moderate	Moderate